Department of Energy
Richland Operations Office
P.O. Box 550
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APR 19 1995

Mr. John L. Erickson
Division of Radiation Protection
State of Washington
Department of Health
P.O. Box 47827
Olympia, Washington 98504-7827

Dear Mr. Erickson:

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RESPONSE TO THE STATE OF WASHINGTON, DEPARTMENT OF HEALTH, COMMENTS OF APRIL 5, 1995, ON "IDENTIFICATION OF CONTAMINANTS OF CONCERN," PNL-10400, UC-630, DRAFT, JANUARY 1995 40940

Attached are the U.S. Department of Energy, Richland Operations Office, responses to the subject comments. If you want to discuss these comments, please contact Mr. Randy Brich at (509) 376-9031.

Sincerely,

Julie K. Erickson, Director
River Sites Restoration Division

RSD:RFB

Attachment

cc w/attach:
S. Alexander, Ecology
P. Eslinger, PNL
L. Gadbois, EPA
D. Holland, Ecology
R. Jim, YIN
B. Napier, PNL
D. Powaukee, NPT
J. Wilkinson, CTUIR
J. Yokel, Ecology

RESPONSE TO THE STATE OF WASHINGTON, DEPARTMENT OF HEALTH, COMMENTS OF APRIL 5, 1995, ON "IDENTIFICATION OF CONTAMINANTS OF CONCERN," PNL-10400, UC-630, DRAFT, JANUARY 1995

Responses to each of the following comments are provided below:

1. The Hanford Site Risk Assessment Manual (HSRAM) is stated as the reference for exposure scenarios. This raises questions regarding the goals of this study and the use of previous efforts. Significant effort, both in development and review, has been spent on the Hanford Site Risk Assessment Manual, yet the CRCIA is planning to produce a document covering analysis scenarios (which are included in HSRAM). Substantive changes in the analysis scenarios from those presented in HSRAM may necessitate the need to revise the screening criteria used in this document.

   Response: Not accepted. The screening criteria are essentially independent of scenarios in the HSRAM and later scenario development for the CRCIA.

2. Specific details regarding the exposure scenarios should be listed. For example, this publication uses 10 mg/day as the sediment/soil ingestion rate. Further substantiation for the use of this value should be made, i.e. is the target individual an adult and not a child, were average soil ingestion parameters used, etc. HSRAM recommends 200 mg/day. This value clearly applies to a child. The NRC recommends 50 mg/day as a maximum for an adult and 100 mg/day as a maximum for a child (Kennedy 1992). Kennedy also summarized that "soil intake by children is generally less than 100 mg/day (except for children who exhibit unusual soil ingestion habits)." In light of the locations for exposure (Hanford Reach), an adult exposure scenario may be more appropriate (limitations to river access, number of times on the river, etc.). The DOH recommends a 50 mg/day ingestion rate for an adult scenario and screening value.

   Response: Not accepted. The scenario analyzed sediment ingestion, not dry soil ingestion. DOE believes that sediment ingestion is less than soil ingestion.

3. A further explanation of all exposure parameters should discuss the type of scenario, such as recreational, occupational, or residential. If recreational parameters are used, then pathways such as dermal absorption and inhalation of resuspended materials should be addressed. If residential parameters are used, then the food ingestion pathway should also be identified.

   Response: Accepted in part. The parameters described are all for residential type exposure. Crop ingestion terms will be added to the screens.

4. This document analyzes contaminants by equating their concentration in a given media to the concentration in the surface water. The impression created through this method is that the document is modeling concentrations as opposed to using real data. A more

detailed explanation of the modelling process should alleviate this confusion.

Response: **Not accepted. Data are used when available. When data are not available, the model used is explicitly described.**

5. A suggested test for validating this model would be to compare the current contaminants of concern list to those developed by applying this model to each media (sediment, groundwater, soil, etc.). The model should yield the same contaminants of concern list for every media.

Response: **Not accepted. This comment is unclear. The screens (more than one model) are applied to all media.**

6. The inhalation pathway is not listed as a pathway of consideration in the screening criteria yet it was concluded as the most limiting pathway in Section 5 for discrete particles. The radionuclide screening should be updated to include this pathway.

Response: **Not accepted. The screens used were designed for ranking purposes rather than detailed pathways analysis. The inhalation exposure pathway generally contributes only a fraction of the dose received from ingestion (Strenge et al. 1994). Scenarios to be analyzed for the Tri-Party Agreement Milestone will consider this and other exposure pathways.**

7. The Scope of Work states that only soil within 150m of the river are included in the review, yet the 200 areas are evaluated and included. The scope of work should be updated to accurately reflect this information.

Response: **Accepted. The data compiled were from near-river operable units or from the site within 500 ft of the river. Text will be added to clarify this aspect of the data selection process.**

8. More detailed data should be included to support the summation that Sr-90, Cs-137 and Co-60 contamination from the 200 Areas will decay prior to reaching the river. This specific point was a major stumbling block during discussions at the last CRCIA meeting of the three parties.

Response: **Not accepted. The paragraph referred to contained explanatory material. Travel times were not used (instantaneous transport was assumed) in the screening equations.**

9. Further quantification of the probabilities of inhaling discrete particles should be included as "remote" means different things to different people. A DOH letter sent to EPA characterized the probabilities of contact and impact of discrete particles along the Hanford Shoreline. This letter is attached in order to aid in the quantification of probabilities.

Response: **Acknowledged. Discrete particles will be assessed in later CRCIA project work.**

10. More accurate data regarding the exposure rate along the 100N shoreline exists. The 100 μR/hr exposure rate referenced is probably from a μR meter and will over-respond to the low energies observed at 100N shoreline near the Liquid Waste Disposal facilities. The hourly average of the maximum TLD result would be a more accurate as an upper bound. The DOH surveyed the 100N shoreline in 1994 with a μRem meter. The maximum result indicated by this instrument was 32 μR/hr near the 1304-N Emergency Dump Tank. The highest exposure rate recorded near the disposal facilities was 28 μR/hr. Both of these values include background which DOH determined to be 8 μR/hr. A DOH publication discussing the contribution from significant individual sites within the 100N area and the estimated dose should be available by the end of April.

Response: Acknowledged. The value used was from a published reference that qualified it as an over-estimate. Realistic values will be used later in detailed assessments.

11. More specific data should be included regarding the relative contribution of Cs-137 from the Hanford Site, and the relative contribution of fallout. For example, the McNary pool sediments are approximately 75% from fallout and the remainder from Hanford origins (Wells, 1994).

Response: Acknowledged. The value used was from a published reference and was qualified as having partial non-Hanford origin. Realistic values will be used later in detailed assessments.

12. If localized effects of seeps/springs are considered in subsequent revisions, probability estimates of the likelihood of encounter should be included in addition to the estimated dose.

Response: Not accepted. However, a deterministic screen will be developed for seeps or springs to identify contaminants (not risk).

13. HSRAM provides a succinct description of the dose that ecological receptors can safely receive (Table C-3). Further information can be gleaned from NCRP Report #109 on the Effects of Radiation on Aquatic Organisms. This information, in conjunction with the radionuclide screening process, should be utilized to summarize where predicted doses lie in relation to the levels where known effects occur.

Response: Not accepted. DOE is not summarizing predicted doses. However, references cited all indicate an acceptable level of biotic risk at 1 rad/day. None of the concentrations in this document approach that value.

REFERENCES

Kennedy, W. E., Jr., Strenge, D. L., 1992, Residual Radioactive Contamination from Decommissioning, NUREG/CR-5512, Pacific Northwest Laboratory for the Nuclear Regulatory Commission.

Wells, D. P., 1994, Special Report: Radioactivity in Columbia River Sediments and Their Health Effects, Environmental Radiation Section, Washington Department of Health.